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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,060	01/22/2004	Ashavani Kumar	5828-00300	3726

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EXAMINER	
METZMAIER, DANIEL S	
ART UNIT	PAPER NUMBER
1712	

DATE MAILED: 06/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/763,060	KUMAR ET AL	
	Examiner	Art Unit	
	Daniel S. Metzmaier	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *1/22/2004; 8/2/2004; & 12/20/2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/20/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-11 are pending.

Specification

1. The use of the trademark AEROSOL® OT has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner, which might adversely affect their validity as trademarks.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claims 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 9 employs the use of the trademark AEROSOL® OT. Since trademarks may change over time, said use in claims is deemed to be indefinite. It is suggested applicants employ the generic language that represents the specific compounds of AEROSOL® OT.

In claim 10, it is unclear what the concentration is based, e.g., molar, weight, or unspecified other.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 5-6, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Simard et al, "Formation and pH-Controlled Assembly of Amphiphilic Gold nanoparticles", *Chemical Communications*, 2000, pages 1943-1944.

The claims require mixing a solution of a surfactant in a polar solvent with a solution of hydrophobic nanoparticles in an organic solvent.

Simard et al (item 8, Notes and References, page 1944) discloses the displacement of thiolalkyl groups with surface active thiolalkylcarboxylates in tetrahydrofuran (THF). Said reaction results in water dispersible nanoparticles, which are further characterized as soluble in methanol, ethanol and slightly soluble in THF. THF is a polar solvent and is also an organic solvent. The claims do not define the polarity of the solvent or the organic solvent.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simard et al, "Formation and pH-Controlled Assembly of Amphiphilic Gold nanoparticles", *Chemical Communications*, 2000, pages 1943-1944, taken with Tecle, US 6,190,731 B1.

Simard et al (item 8, Notes and References, page 1944) discloses the displacement of thiolalkyl groups with surface active thiolalkylcarboxylates in tetrahydrofuran (THF) as set forth in the anticipation rejection above.

Simard et al differs from the claims 4, 7-9 and 11 in the agitation time, the type of nanoparticles, the particular surfactant or solvent.

Tecle (abstract, column 3, lines 30-33; column 4, lines 36 et seq, especially, lines 62 and 64 to column 5, line 3; column 5, lines 4-8 and 28-32; column 6, lines 17-29; column 7, lines 8-15; examples and claims 4, 28 and 29) disclose isolating ultrafine particles by treatment of ultrafine suspensions, which may take the form of organosol, with surfactants. Tecle (column 4, lines 36 et seq and 66) teaches solvents including

ethanol, propanol and THF among others and the use of suspensions in the form of hydrosols, i.e., aqueous sols.

Tecle differs from the claims in the disclosure of an explicit example or disclosure of the treatment with sufficient specificity.

Tecle (column 5, lines 4-8 and 28-32) teaches the encapsulation of the particles enables the particles to weakly flocculate and settle out of suspension for easy recovery, are easily re-disperse with simple agitation. Said encapsulated particles are characterized as result in a more useful form.

Tecle (column 6, lines 17-29 and claims 28-29) sets forth the encapsulants comprise surfactants including water soluble surfactants and teach the encapsulants may be mixed with a solvent prior to addition to the suspension of particles along with the additional solvent. Tecle (column 5, lines 53-55) teaches the encapsulant selection is within the level of those having ordinary skill in the art based on the characteristics of the solvent and the particles.

It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to treat an organosol of ultrafine metal particles of Simard et al with the surfactant encapsulants in aqueous solvent and/or alcohol, which they are soluble as broadly taught and/or suggested in Tecle as obvious functional equivalents to the thiolalkylcarboxylates of the Simard et al reference.

It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ the surfactant encapsulants in aqueous solvent and/or alcohol, which they are soluble as broadly taught and/or suggested in Tecle in the

processes of Simard et al for the advantage of making a polar solvent dispersible particle.

The particular nanoparticles would have been within the level of one having ordinary skill in the art for the desired end use. Tecle (column 6, lines 10 et seq) contemplates non-metal particles, which may include zirconates and titanates as further encapsulants.

9. Claims 1-6 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reetz et al, US 5,925,463. Reetz et al (abstract) discloses the electrochemical reduction of metal salts to form a highly dispersed metal colloids. Reetz et al (examples) forms particles having nm size or tens of nm sizes. Reetz et al (column 3, line 58 et seq ; especially column 4, lines 14 et seq) discloses metal clusters stabilized with ammonium or phosphonium salts are soluble in organic solvents, i.e, hydrophobic. Reetz et al (column 4, lines 17 et seq) further teaches water solubility is achieved by employing stabilizer including a number of surfactants, e.g., cocoamidobetaines, sultaines and polyglycosides.

Reetz et al differs from the claims in the use of a specific example employing a biphasic mixture.

Reetz et al (column 6, lines 5 et seq) teaches the metal clusters prepared therein are useful as homogeneous catalyst in two phase systems, e.g., H_2O/toluene such as a betaine stabilized Pd cluster soluble in H_2O.

It would have been obvious to one of ordinary skilled in the art at the time of applicants' invention to employ surfactants in an aqueous solution to render metal

clusters disclosed in Reetz et al water soluble for the desired end use as clearly taught in the Reetz et al reference. The incorporation of the surfactants in an aqueous solvent logically flows from the conventional knowledge of their solubility as taught in the Reetz et al reference.

The agitation and the time for agitation are well within the ordinary level of one having ordinary skill in the art at the time of the invention for the advantage of obtaining an equilibrium and stability of the surfactant stabilizers in the reaction system for the clear purpose taught in the Reetz et al reference.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (571) 272-1089. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Daniel S. Metzmaier
Primary Examiner
Art Unit 1712

DSM